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The Flow of Funds as a Tool of Analysis in Developing Countries

Alan R. Roe

The preparation of relatively detailed flow-of-funds accounts for developing countries is becoming common. Long series of such accounts are now available for India, Korea, and other countries, and partial exercises are available for several more. This comprehensive format of financial information is being used both in descriptive work on financial questions and in the calculation of financial implications of development policies. The work, however, is often compartmentalized and kept substantially separate from statistical and analytical work on the real economy.

We begin with a few remarks about the methodology of constructing flow-of-funds accounts and about the narrowly statistical advantages of their integration with SAM data proper. Our main purpose is to explore the possible analytical uses of flow-of-funds data for developing countries and to form a view about how well the existing data serve these functions. A central conclusion is that substantial improvements are needed in both sectorization and disaggregation of claims, in order to obtain quantitative insights about the role of finance in the development process.

THE STATISTICAL FORMAT

A statistical format for the flow of funds, which is most general and corresponds closely with that used in the SNA, is set out in table 3.1. The format is that used in Stone (1966). Note that subscripts refer to the order of matrices and vectors shown as entries in the table.

This structure has two elements that link it back to the real economy in a purely statistical sense, namely, the savings vector (including the balance of payments deficit) and the real investment vector. This linkage involves certain difficulties. For example, the sectoral savings of table 3.1 ought to include the capital gains/losses of each sector even though these would normally be excluded from the national income accounts. Similarly, the real investment of table 3.1 ought to include the second-hand purchases/sales of each sector even though these would normally be excluded from the national accounts. If these problems can be overcome, the structure of table 3.1 provides an additional set of accounting identities that can contribute a good deal to the identification and elimination of inconsistencies between different data sources. For example, from the explicit identities of table 3.1, we can derive the following:

$$s_j = a_j - L_{jk}i_k, \tag{3.1}$$

that is, sectoral saving is identically equal to the total of assets acquired by the sector less the liabilities issued, and

$$z_j = l_j - A_{jk}i_k, \tag{3.2}$$

that is, sectoral real investment is identically equal to the total sources of each sector less the financial assets acquired.

Since, in all SAM exercises reported so far, the estimation of sectoral saving as the residual of income and expenditure accounts is recognized as an extremely inaccurate procedure, the

Table 3.1. The Structure of the Flow-of-Funds System

	Savings	Institutions	Financial Claims (liabilities)	Total Liabilities
Real Investment		z_j		
Institutions	s_j		L_{jk}	$l_j = s_j + L_{jk}i_k$
Financial Claims (assets)		A_{jk}		a_k
Total Assets		$a_j = z_j + A_{jk}i_k$	l_k	

Note: $a_j = l_j$
$l_k = a_k$
s_j = the vector of savings of the j sectors
z_j = the vector of real investment of the j sectors
L_{jk} = the matrix of new issues of liabilities (of the k types) by the j sectors
A_{jk} = the matrix of financial assets (of the k types) purchased by the j sectors
a_j = total asset purchases (real and financial) of the j sectors (that is, total uses)
l_j = total financial issues plus savings (that is, total sources)
l_k = total issues of claims of the k types
a_k = total purchases of claims of the k types.

supplementary information provided by equation (3.1) and the associated financial data are clearly of potential value. In the Overseas Development Ministry and University of Warwick social accounting exercise in Botswana, for example, the flow-of-funds data, while themselves full of difficulties, proved of value in identifying certain initial errors in the estimation of items in the income and expenditure accounts of the SAM and in providing a subsequent basis for an upward adjustment of household income (see chapter 7). This advantage to appending a flow-of-funds element to the SAM structure illustrates a general proposition: the more identity constraints that can be brought to bear upon a particular element of the structure, the smaller will become the confidence interval surrounding the estimation of that element.

The obvious qualification that needs to be attached to this proposition concerns the accuracy with which the additional constraint can itself be specified. More specifically, we have to ask whether the flow of funds for a "typical" developing country can be estimated with sufficient accuracy to service the functions that our preliminary estimates discharged in the Botswana exercise. The answer is probably country specific, but a few remarks about the situation as it was encountered in Botswana may nevertheless be of interest.

Botswana is a small and institutionally simple economy, and it was therefore a relatively straightforward task to extract full balance sheet information for all of the public corporations,

banks, other financial institutions, and major mining corporations. First differencing of adjacent balance sheets (in the absence of any significant asset revaluations) yielded information about the financial flows of our 1974–75 data period. The second stage of the exercise involved identification of the other party to all financial transactions taken directly from balance sheets. This was possible by virtue of (a) direct information (for example, the balance sheets of the banks specify the sector to which loans are made and from whom deposits are received) and (b) some knowledge of individual sector-to-sector relationships (for example, the public corporations only receive loans from central government). In a residual, but small, number of cases, the second party to each directly observed transaction had to be deduced by a combination of assumptions and guesswork.

The third stage of the estimation involved completion of sectoral accounts for households, including unincorporated enterprises; nonmining and nonpublic corporations; and the central government. The procedure simply entailed identifying those transactions that were obviously important but had not been captured by the previous two stages and then constructing the best possible estimate of their magnitude. For the central government this procedure was relatively straightforward. For households and nonmining and nonpublic corporations it was extremely speculative.

The overall impression was that, since the first two stages of this procedure could be completed with a reasonably high degree of accuracy, and since the really difficult residual items were relatively few in number, our final estimates of sectoral saving as deduced through equation (3.1) were probably more accurate for some sectors than estimates derived from income and expenditure accounts.

The method we have outlined seems, in broad terms, to be the one used in flow-of-funds estimation in other country contexts (see Venkatachalam and Sarma, 1977), with households, unincorporated enterprises, and all but the very large corporate enterprises generating all the serious estimation difficulties. It can easily be replicated in countries for which no flow-of-funds data currently exist and can be done at relatively modest cost. However, it is a methodology clearly capable of providing statistical feedback to the rest of the SAM only in the simpler economies. In more complex cases, the residual estimation problems associated with the flow-of-funds system may not permit it to define narrow, and therefore useful, constraints on the estimation of the rest of the SAM.

The final point on the purely statistical side concerns the layout of the flow-of-funds information. There are two possible alternatives to what might be termed the sector-claim format of table 3.1. The first is the sources-uses table in which both sector and claim detail is retained but in columnar form (a sources and uses column for each sector), rather than in the A and L matrices of table 3.1. The sources-uses approach essentially rearranges the A and L matrices of table 3.1 in such a way that any sale of an asset, or acquisition of a liability, by a sector is shown in the sources column for that sector, while any purchase of an asset or repayment of a liability is shown in its uses column. In effect, both the set of sources columns and the set of uses columns are matrices (having the dimensions sectors times type of claim), but the normal practice is to arrange the sources and uses columns of each sector next to each other so that these two matrices are interwoven into one.

The advantage of this procedure is that the full picture of any sector's capital transactions is easily seen. The main disadvantage is that some of the interesting aggregates that are obtainable from the format shown in table 3.1 (for example, a_k and l_j) are lost. However, since both formats cross-classify the available information by sector and type of claim, one can normally be constructed from the other with minimal difficulty.

The third approach, in contrast, completely suppresses the financial claims dimension of the presentation and shows a matrix of lender-borrower flows; the lending sectors are shown as columns of the matrix and the borrowing sector as rows. (A good example of this form of

presentation is given in Bhatt, 1969.) Thus, if a sector issues, say, three types of financial claim—currency, securities, and savings bonds in the case of government—then any sector acquiring any one or more of these would be shown as lending to government the amount of the acquisition. No detail regarding the type of claim through which this lending was channeled would be provided. In the Botswana case, we were able to demonstrate that the sector/claim format could be translated into a lender/borrower format with little difficulty since most claims in issue were associated with just one sector. Thus, for example, the knowledge that the household sector was accumulating rand currency in 1974–75 indicated that the sector was, in effect, lending to the rest of the world.

The snags with the lender/borrower format are, first, that it cannot be used to infer anything about the channels and instruments through which these funds are flowing and therefore about the manner in which the flows might be influenced by changes in the conditions attached to certain instruments. Second, this format provides no link whatsoever with sectoral portfolio structure and with the sectoral behavior patterns that influence flows of funds. Any analysis based on it has to be largely mechanistic. Finally, it is impossible to move from it to either of the two alternatives.

PREVAILING ANALYTICAL USES

Although pioneering work on flow-of-funds data began nearly four decades ago, far more effort is still devoted to the data than to the analysis. However, analytical uses are becoming relatively common in the developing countries, and in this section we focus on three of the most important.

First, comprehensive flow-of-funds data are increasingly used as the framework for historical descriptions of the evolution of an economy's financial system and for comparative analysis of financial developments in different countries. (An IBRD financial sector mission to the Ivory Coast, for example, has used the flow of funds as its descriptive framework.) It is, of course, interesting to know something about differences in the rate of creation of financial assets either through time or across countries, about the changing relative importance of different instruments in the total of financial assets, and about the manner in which a given structure of real investments was financed. In organizing these and other pieces of financial information, historical flow-of-funds data serve an extremely useful purpose.

What is invariably lacking in such studies, however, is a consistent theory concerning the manner in which the financial events have interacted with the production, consumption, and income creation in the real economy. In particular, such studies rarely provide insights into how production, levels of income, and other real economic variables would have been affected if the financial flows had evolved differently.[1] Lacking the theory to make connections for historical periods,[2] descriptive flow-of-funds work also provides relatively little policy guidance for those who would attempt to intervene in the evolution of the financial systems of the developing countries.

The second common application is in the broad area of financial planning, particularly in

1. There are, of course, notable exceptions to this as a general statement about the analysis of the contribution of the financial sector to economic development. See, for example, Patrick (1966).

2. This statement should not be interpreted to mean that no attempts have been made to establish these connections. Goldsmith, in particular, has done prodigious amounts of work in this area but without arriving at any really general conclusions. For example, his book, Financial Structure and Development, ends with the statement "... The question [does finance make a difference?] certainly cannot be settled before the theory of finance is developed much further in the direction of analyzing the process of financial development and its relation to economic growth in operational testable terms and before we possess a substantial number of intensive case studies for different representative countries and periods that use the framework of such a financial theory" (Goldsmith, 1969).

calculations of the sectoral financing implications of medium-term development plans. This work has traditionally been carried out on a rather ad hoc basis with particular attention directed at the manner of financing government deficits. There is, however, an increasing interest in a more comprehensive and a more formal approach to the problem.

A good example of this approach is work conducted by Venkatachalam, Bhat, and others at the Reserve Bank of India (see, for example, Bhat, 1972). Their procedure develops the original idea of Stone (1966), in which an exogenous vector of sectoral investment is applied to coefficient matrices constructed from the A and L matrices of table 3.1. Assuming constancy of all elements of the coefficient matrices and enforcing all the identities implicit in table 3.1, Stone's procedure generates the vector of sectoral saving that is consistent with the exogenous investment and the portfolio composition indicated by the coefficient matrices. The interesting elaboration injected by the researchers of the Reserve Bank of India is estimation of marginal portfolio coefficients based on time trends and their use, rather than the average coefficients, in the coefficient versions of the A and L matrices. Applying the procedure to the investment targets of the Fourth Indian Plan, they compute consistent sectoral savings figures, as well as the implied increase in the amounts outstanding of each major financial claim. By comparing their derived savings vector with the target savings vector from the plan, they are able to identify the trends that are necessary to ensure the attainment of these targets.

A similar procedure, based on a lender-borrower format of the flow-of-funds system, is described in the papers by Bhatt (1969) and Divatia (1969). Divatia's paper is more formal and takes as constant the coefficients constructed by relating the elements of the lender/borrower matrix to their row totals (or column totals). With either sectoral saving (or investment) taken as exogenous, he generates the consistent sectoral pattern of investment (or saving). Bhatt's approach is similar in structure, but he incorporates additional information to avoid the assumption that the coefficients of the lender/borrower matrix will remain constant at their historically estimated values. These papers are valuable in identifying possible inconsistencies between the sectoral savings and investment targets of the Indian plan, which they analyze. Indeed, the work was used to modify the initial estimates of the investment targets of that plan. A similar exercise, but for another continent, is described in a paper by Bhatia and Engstrom (1972) on the Second Nigerian Plan.

These papers are valuable in extending the consistency analysis of development plans to their financial dimensions. There is still a need for more explicit procedures whereby inconsistencies, once uncovered, can be eliminated. There is little doubt, however, that the comprehensive flow-of-funds approach to the problem represents a considerable improvement over the partial equilibrium approaches emphasizing government.

These first two analytical uses of flow-of-funds information potentially involve the full gamut of financial claim and sectoral detail. A third example is rather different in that it draws on certain key elements of the flow-of-funds picture. We refer to the burgeoning literature concerned with the empirical formulation for developing countries of monetary models of the balance of payments. In this literature, the central sectoral flows are those of the commercial and central banks shown in simplified form in table 3.2.

Consolidation of these two flow accounts, the netting out of central bank borrowing from government (that is, government deposits) against its loans to government, and the netting out of the currency held by the banks against amounts issued, yields the following identity:

(3.3) $$\Delta \text{ Currency held outside banks} + \Delta \text{ Commercial bank deposits} = \Delta \text{ Loans and advances to government} + \Delta \text{ Loans and advances to private sector} + \Delta \text{ Foreign reserves}$$

which is equivalent to:

(3.4) $$\Delta \text{ Money supply} = \Delta \text{ Domestic credit} + \Delta \text{ Foreign reserves.}$$

Table 3.2. Flow of Funds of Commercial and Central Banks

A. Commercial banks

Changes in Liabilities	Changes in Assets
Private Deposits	Currency
Government Deposits	Balances with Central Banks
	Loans and Advances to Government and Private Sector
Total = X_1	Total = X_1

B. Central bank

Changes in Liabilities	Changes in Assets
Currency in Circulation	Loans and Advances to Government
Government Deposits	Loans and Advances to Private Sector
Balances of Commercial Banks	Foreign Reserves
Total = X_2	Total = X_2

Since the majority of developing countries are highly open to trade, the change in the money supply is taken to be strongly endogenous in the sense that an expansion in domestic credit, to the extent that it stimulates aggregate expenditure, will generate an increase in imports and a fall in reserves. Thus the two terms on the right side of (3.4) will partly offset each other and so reduce the final money supply expansion associated with any given initial change. The recent monetary models for the developing countries have mostly been concerned with specifying, elaborating, and testing this basic insight in order to form a view as to the nature of the interaction between monetary and credit factors, on the one hand, and income levels, prices, and the balance of payments, on the other.

The original model along these lines for developing countries was developed by Polak (1957) and involved the endogeneity of nominal income, imports, and the money supply. The income velocity of circulation of money was rigidly constant in the classical manner; exports, capital inflows, and domestic credit were all exogenous; and real income was held constant through a full employment assumption. Subsequent work has introduced greater endogeneity into the model by relaxing many of the rigid classical assumptions and thus providing fuller insights into the division of monetary effects between real and inflationary consequences. A brief summary of the additions to the basic Polak structure introduced by five papers in this area is given in table 3.3. A couple of examples will suffice to indicate the sort of insights that these models can provide.

Table 3.3. Summary of Characteristics of Five Macromonetary Models

	Price Sensitivity of Imports	Price Sensitivity of Exports	Short-term Capital Flows Endogenized	Rate of Interest Involved	Rate of Interest Endogenized	Some Links from Nominal to Real Magnitudes	Inflation Rate Endogenous	Supply Determination Explicitly Specified	Government: Private Sectorization
Aghevli (1977) INDONESIA	✓	(a) ✓	X	✓	X	X	✓	X	(b) ✓
Khan (1974) VENEZUELA	✓	X	✓	✓	✓	X	X	X	✓
Aghevli and Khan (1977) INDONESIA	Whole of balance of payments is exogenous			X	X	X	✓	X	✓
Otani and Park (1976) KOREA	✓	X	X	✓	X	✓	✓	(c) ✓	X
Otani (1975) PHILIPPINES	✓	X	X	X	X	(e) X	✓	(d) X	X

Notes: ✓ = a characteristic that is included.
X = a characteristic that is not included.

a. Applies to non-oil exports only.

b. Sectorization only in the sense that government revenues and expenditures appear explicitly.

c. Nonprimary sector only; the primary sector is exogenous.

d. A trend value of supply confronts monetarily determined demand to generate price and inflation effects.

e. Real income is endogenous.

In a joint paper by Aghevli and Khan (1977) on Indonesia, the authors argue that inflation itself feeds the growth of the money supply (as well as being fed by it) by causing government expenditure to rise faster than revenues, thereby generating the need for increasing amounts of deficit financing. To focus attention on this central point they simplify the basic Polak structure by regarding the balance of payments as exogenous, so that the only endogenous influence on the money supply is the government deficit. Given the exogeneity of real income and the absence of any interest rate term in the demand for money function, an initial rise in the money supply can only be matched by a change in demand to the extent that the domestic price level is increased (thereby reducing the excess of real money balances). However, the rise in price stimulates a larger increase in nominal government expenditure than taxes and increases both the government deficit and the monetary base. That generates a second round of monetary expansion, the effects of which are exacerbated by the adaptive adjustment of inflationary expectations and the resulting fall in the equilibrium holdings of real money balances.

Similarly, in the Otani and Park (1976) model for Korea, the initial response to a monetary expansion is a rise in the domestic price level to clear the money market. However, in their model this response stimulates imports, which also appear as an explicit input in the production function of the nonagricultural sector. Thus the real output of that sector rises. This rise causes an increase in the nominal demand for money which moderates the earlier price increase, as does the reduction in the money supply associated with the deteriorating balance of payments. Thus output, monetary variables, prices, and the balance of payments are inextricably woven together.

The models just described are not flow-of-funds models in the conventional sense; they do not involve a full specification of the intersectoral flow of funds and do not enforce all the financial accounting identities implicit in table 3.1. Thus they commit some of the sins of implicit specification discussed at length by Brainard and Tobin (1968). The models can also be criticized because the strong link between aggregate demand and imports (that is, the openness assumption), the central element in most of them, is of dubious validity when the import demand of so many "open" developing economies is in fact heavily dictated by direct central controls.[3] Finally, their presumption that there is a real possibility for developing countries to have "pure" monetary policy—that is, a change in the money supply that does not require changes in government expenditure or taxation—either flies in the face of reality or misleadingly applies the label "monetary" to something that, with equal validity, might be regarded as "fiscal."

THE ROLE OF THE FINANCIAL SYSTEM IN ECONOMIC DEVELOPMENT

Clearly, all the applications we have just discussed are extremely useful in their own different ways, and it would be quite wrong to argue otherwise. Of themselves they justify the continuing effort to produce flow-of-funds data for a wider range of countries and to use the classifications and the methodologies already established. However, if we take either the view that the financial sector is a potentially important and independent source of dynamic in a country's economic development or the view that inappropriate financial policies can, of themselves, damage a dynamic established by innovation in some other sector, then a somewhat more critical standpoint might emerge. In the rest of the paper we explore the implications of these viewpoints and conclude that if we wish to quantitatively analyze the innovative (or repressive) influences of financial policies, then we need to think harder about what sort of flow-of-funds data will be most appropriate.

We begin with the view that the financial system of a developing country at any time is a

3. I am grateful to William Dellalfar for this point.

part of its inherited technology in the same way that the production systems of its factories are part of that technology. The financial technology services two essential functions, namely, the facilitation of the movement of funds from surplus to deficit sectors and the provision of incentives to stimulate future as opposed to present consumption and so help move society closer to some "optimum" mix of these two quantities. In other words, its functions are to stimulate and allocate savings. Now it is clear that the financial technology of a typical developing country services these two functions extremely imperfectly. This imperfection is not so much because the resources available to existing financial institutions do not work to good effect; rather it reflects certain barriers to the expansion of these institutions to anything like an optimal scale of operation. Furthermore, these barriers may be inherent in the nature of a developing economy or erected by some form of government intervention.

If this can be accepted as a starting point, we can easily move on to two important propositions. The first is that beneficial developments in the real economy (for example, a technological breakthrough in agricultural production) may be completely frustrated or have their benefits moderated by imperfections of the financial markets. The second is that innovations in the financial markets, to the extent that they reduce the inefficiencies of these markets, can generate independent benefits in the real economy. In either case, the financial system is important to understanding the behavior of the real economy. But the nature of that importance can only be understood by first acquiring a clear comprehension of the causes and consequences of the imperfections of the financial markets and the manner in which these might be overcome. (This point is clearly ignored by most of the literature that attempts to incorporate a monetary asset into standard growth models.)

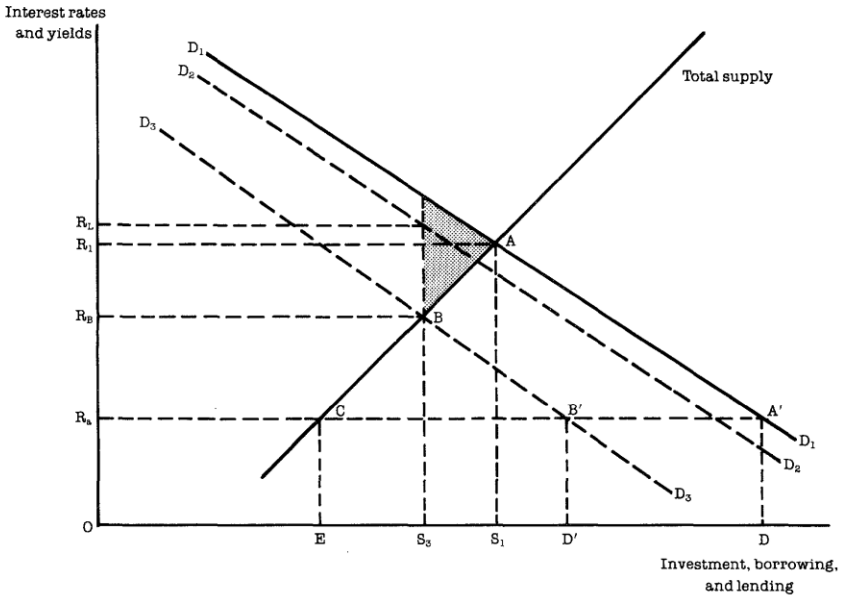
Most sources of capital market imperfections in developing countries can be summarized under two main headings: interest rate restrictions (including restrictions on the terms of lending and borrowing other than the interest rate) and transaction costs. The first speaks for itself, but the second needs elucidation.

Financial transactions, by definition, involve the intercession of time (for example, time between borrowing and repayment dates), as well as the contractual interlinking of persons unknown to each other to varying degrees. Thus both uncertainty and imperfect information arise to drive a wedge between the demand price of real capital assets and the price at which funds can be borrowed to finance their acquisition. This is in addition to the wedge between these two prices arising from the operating costs, including profits, of the financial institutions. Since imperfect information only arises as a problem in an economy having transaction costs (otherwise borrowers and lenders could spend infinite time in gathering the information to make correct borrowing and lending decisions), we can theoretically represent the effect of any given imperfection of information by the amount of transaction costs needed to overcome it. Similarly, uncertainty can be represented as a transaction cost (for example, the uncertainty of the lender might be represented as his evaluation of the probability of default of the borrower, multiplied by the amount of the proposed loan). Finally, recognizing that there are transaction costs in the broad sense incurred by both borrowers and lenders, we can construct a catalog of elements that form total transaction costs, and thereby contribute to capital market imperfections. The elements are as follows:

Borrower (or demand) side of the market

1. The administrative costs and opportunity costs of the borrower (for example, traveling time to geographically distant banks).
2. The borrower's risk as evaluated by the borrower, that is, the difference between the expected marginal efficiency of an investment project and the rate at which the borrower is prepared to borrow funds to finance it.

Figure 3.1. The Effects of Transaction Costs



Lender (or supply) side of the market

3. The administrative costs of the lending institution (for example, wages and profits).
4. The interest premium that the lender requires as compensation for his evaluation (correct or otherwise) of the riskiness of the loan or the absence of conventional security.

The effects of these sources of inefficiency can be seen very simply in figure 3.1.[4] The demand curve D_1D_1 represents the marginal efficiency of capital schedule, while the first downward shift of this curve, D_2D_2, represents its adjustment for borrower transaction costs, and the final shift, to D_3D_3, represents its adjustment for borrower and lender transaction costs.

In the absence of transaction costs, the economy will attain an equilibrium at point A, with total lending equal to OS_1 and the borrowing and lending interest rate equated at R_1. With allowance for transaction costs, the equilibrium moves to point B, total lending falls to OS_3, and the lending and borrowing rates of the financial institutions ("banks") diverge by the distance R_LR_B. Above all, the transaction costs impose a loss of surplus on the economy equal to the shaded area in the figure, in addition to certain dynamic losses associated with a lower level of real investment. Equally it is clear that a reduction in transaction costs associated with greater efficiency in capital market transactions in any of the four senses identified in the classification given above will provide the economy with real gains in income and output.

4. In this exposition, we are ignoring the possible effects of monopoly power in the hands of the financial institutions. Such a monopoly would have effects similar to those of the four sources of inefficiency that we do consider.

This much is clear and probably fairly obvious. The story becomes more interesting when we allow for some sectorization based upon the differential transaction costs of borrowing and lending of different sectors. For purposes of exposition imagine a "traditional" sector that has relatively high transaction costs and a "modern" sector that has relatively low transaction costs. Through an extension of figure 3.1, it is a relatively simple matter to demonstrate the following propositions (see Roe, 1978):

1. In the absence of transaction costs the marginal efficiency of capital is equated in the two sectors.
2. Transaction costs impose a larger fall of lending, and of surplus, on the traditional sector than on the modern.
3. If the banks are allowed to discriminate by price, transaction costs will result in their charging a higher interest rate to the traditional sector than to the modern.
4. If price discrimination is not allowed, the same effect will probably be achieved by imposing more stringent nonprice conditions on lending to the traditional sector.

In short, as well as imposing an aggregate economywide reduction in welfare, transaction costs will cause a disproportionate reduction in lending to the traditional sector and consequently a reduction in that sector's investment, its income, and the output that it produces. Thus, just as economywide analysis would clearly wish to specify the effects of taxes and the effects of removal of taxes having uneven incidence, so ought such an analysis to specify the effects of differential sectoral transaction costs in financial intermediation. There is no theoretical reason to expect these effects to be trivial or sectorally neutral.

The second source of capital market inefficiency, namely, the administering of the interest rate, is also easily analyzed using figure 3.1. Assume that both lending and borrowing rates are fixed at a level R_a, moving the quasi equilibrium of the economy to B′ when there are transaction costs and to A′ when there are not. In fact, this "equilibrium" will be characterized by excess demand of ED′ when there are transaction costs, and ED when there are not. Since the excess of ED over ED′ depends only on transaction costs, it is clear that in this situation the salutary effects of an improvement in the financial technology will lead to an increase in excess demand only and not to any improvement in social welfare. In this same situation, any upward shift in the schedule of the marginal efficiency of capital (because of a green revolution, for example) is likely to have its beneficial effects on the economy moderated by the inelasticity of the supply of funds with respect to the new lending opportunities. Thus, whether a technological improvement is in the financial sphere or elsewhere, one condition for its full benefits to be realized would seem to be the absence of any initial excess demand in financial markets.

Two final issues need to be considered before we attempt to draw out the data implications of this line of reasoning. They both concern the nature of the supply schedule of figure 3.1.

If we conceive of this schedule as representing the supply of funds to the formal (or organized) financial markets, then our analysis rather begs the question of the role of the informal (or unorganized) financial markets of developing countries. We take the view that these markets have two fundamental distinguishing characteristics. First, their transaction costs of borrowing and lending are far lower than those of formal sector institutions serving the same clientele. This difference is partly because they lack expensive infrastructure, but largely because they operate on a narrow local basis and therefore have far lower costs of information. The second characteristic is that they are successful, either by law or by practice, in avoiding administrative restraints on lending and borrowing rates. In short, the informal institutions are distinguished by their comparative advantage in relation to both sources of capital market inefficiency referred to earlier.

What this means in practical terms can be seen by referring back to figure 3.1. In the case in which the interest rate is administered at R_a, the informal sector, to the extent that it can

tap into the part of the supply of funds denied to the formal sector by the interest rate restriction, will move the equilibrium of the economy away from point C and toward point B. It will thereby enable the economy to recapture some of the surplus lost because the interest rate is controlled. Furthermore, since the credit rationing associated with an administered interest rate will almost certainly impinge disproportionately on disadvantaged sectors (the traditional sector in our analysis), the intercession of the informal sector may moderate that distributional effect. However, although it provides these obvious aggregative and distributional benefits, the informal sector may have such a large gap between its lending and borrowing rates that it appears exploitive.

Similarly, if we consider an initial equilibrium at B, then the lower transaction costs of the informal sector will enable it to tap into the supply of funds to the right of B and move the equilibrium nearer to A. Again this confers an aggregate social benefit and provides certain distributional benefits in that the informal sector lending will undo part of the disadvantage of our traditional sector arising from differential transaction costs.

The social functions of the unorganized financial markets are thus clear: they restore part of the social welfare lost by virtue of the two capital market imperfections referred to earlier, and they redistribute income in favor of the traditional sector. If they could discharge these second-best functions perfectly, then we would have no cause to concern ourselves with the imperfections of the formal markets. Unfortunately, the informal markets are themselves defective, most seriously because they are heavily localized in their spheres of operation. This severely restricts their access to the economywide supply of funds, as well as their ability to allocate the funds they do raise in the most efficient manner.

The second issue concerning the supply schedule of figure 3.1 relates to the distinction between aggregate savings and financialized savings (that is, savings mobilized through the financial system). The supply schedule of figure 3.1 would be controversial if it was interpreted as referring to aggregate saving as the supply concept, because the empirical evidence on the interest elasticity of saving is inconclusive (see Saito, 1977). We prefer, therefore, to interpret it as referring only to financialized saving, which implies that the upward slope of that schedule relies upon a diversion of saving away from nonfinancial assets. This diversion is far easier to demonstrate empirically than interest elasticity of saving (see Roe, 1978).

The alternatives to putting savings into financial assets differ for different groups in an economy, but some of these alternatives will be directly productive of real income. Thus the reduction of social welfare associated with the shaded area of figure 3.1 is potentially overstated to the extent that the downward move along the supply schedule from A to B may permit increased direct investment of savings in tangible and productive form, and thus offset the reduced real investment associated with reduced financialized saving. At the risk of some oversimplification, the most important alternatives to the financialization of saving for different groups of a "typical" developing country are the following.

1. For rural households and small businesses: unproductive items such as precious metals, jewelry, and inventories of their own output in excess of consumption needs; productive items such as land, agricultural and handicraft tools, and livestock.
2. For urban households: real estate and various consumer durables.
3. For government: public sector investment projects and overseas investments.
4. For modern sector companies: corporate real capital and overseas investments.

Even a casual inspection of this list reveals that some items will certainly not substitute for financialized saving in the sense that the income and output to which they will give rise will equal those arising from the real investments that financialized saving makes possible. Other items on the list are ambiguous in this respect. However, it follows from the earlier analysis that improvements in relation to either or both forms of capital market inefficiency will move

the economy upward along the supply schedule of figure 3.1. Whether this movement will produce the potential benefits referred to earlier depends on both the source from which the financialized savings are diverted and the output and income forgone by virtue of the reduced direct investment associated with that diversion.

THE IMPLICATIONS FOR FLOW-OF-FUNDS DATA SYSTEMS

The previous section has attempted to identify some aspects of the role that the financial system can play in the process of economic development. We also hope to have identified some of the critical changes in the flow of funds which accompany this development. In this section we attempt to identify some of the implications for data systems which would arise from attempts to do empirical work based on our essentially theoretical argument. We do not begin this task with an expectation that many of our suggestions will be implemented, at least not in the near future. We proceed rather with the view that it is legitimate for a coherent theory to define a data requirement which, if met, could significantly improve knowledge of how particular financial changes might improve economic well-being.

If we accept the proposition that finance is part of an economy's technology, we require classifications that reflect this proposition. In particular, we need a classification of borrowing institutions which reflects the institutions' differential advantages or disadvantages that arise from the transaction cost source of inefficiency. The analogy between these costs and a tax has already been made: we need to be able to identify any group that would receive a disproportionate advantage from the lowering of such a tax. The traditional/modern distinction in our example was not necessarily intended to imply an analogy with the traditional and modern sector of conventional usage. However, it is clear that in many developing countries the small-scale, traditionally organized businesses do suffer a transaction cost disadvantage, and it would seem appropriate, as an initial step, to try to separate this group for flow-of-funds purposes. To develop this classification, we need fuller documentation of the nature and magnitude of the transaction costs faced by each group in the classification. This is a difficult task since only some of these are tangible financial costs. As indicated in the classification presented earlier, certain of these costs involve subjective evaluation on the part of the borrower, the lender, or both and are not readily quantifiable.

In practice, flow-of-funds estimation falls far short of the sectoral detail that the proposal of the previous paragraph implies. Indeed, it has often proved difficult to produce separate accounts for the household and the corporate part of the private sector, let alone any finer disaggregation of these two elements. Where separate household accounts are available they normally depend disproportionately on a residual approach to estimation and incorporate substantial elements of unincorporated business activity. So long as no finer sectorization can be achieved from the data, analyses based on those data seem certain to miss much of the fundamental importance of financial processes.

A second point relates to the portfolio choices that flow-of-funds data reflect. In most applications the ex post measures are wholly concerned with formal sector financial assets and have little to say about (a) informal sector assets and liabilities, and (b) tangible assets that appear in portfolios. Given our theoretical judgment as to the fundamental importance of the informal financial sector in a situation characterized by capital market imperfections, it is critically important that we have some information about how this sector intercedes in the borrowing and lending transactions of different groups. We need to know much more about the portfolios and the potential portfolio choices of those who lend to informal sector financial institutions and about the categories of transactors to which these funds are ultimately made available. Without such information we have no real hope of quantifying the consequences of the imper-

fections in formal capital markets or the consequences of eliminating such imperfections. In particular, we have a quite inadequate basis for analyzing the effects of ending the administration of interest rates at subequilibrium levels.

Similarly, flow-of-funds information needs to give far more attention to the tangible assets that appear in the portfolios of the various sectors. If, as the argument of the previous section implied, the move along the supply schedule of figure 3.1 is merely a diversion of funds from tangible assets to financial assets, then it is important to know something about the nature of tangible assets in each sector and the scope for substitution away from them. In particular, we need some information about the quantities and types of tangible assets that are productive of output, relative to those that are not, in each sector. The standard flow-of-funds practice of incorporating only one catch-all category of tangible asset permits no analysis of this problem.

Clearly nothing can be done about these particular recommendations unless the raw data are available in the appropriate form. Since this will normally not be the case, the first step toward implementing the recommendations is likely to be the elaboration of a survey program directed at households and small-scale businesses, to provide a systematic documentation of the financial aspects of their operations. This chapter has tried to pinpoint the questions that ought to be asked and the analytical uses to which the answers might be put.

CONCLUSIONS

Several of the arguments in this chapter are worth highlighting. First, there is a strong statistical case for fully integrating the flow-of-funds system within a SAM. While this approach is not likely to improve the overall accuracy of every SAM, it will do so in many cases. Second, our partial survey of analytical uses of flow-of-funds data suggests several established uses but notes two fundamental weaknesses as well: either the analyses fail to provide any explicit mechanism whereby the financial system can affect real economic events, or they fail to reflect any of the important distinguishing characteristics of the financial systems in the developing economies, or both.

We have attempted to identify these distinguishing characteristics and, in that light, to examine the possible beneficial effects of an improved financial system on the real economy. The view we take is that these effects are potentially large, both in aggregate social welfare and in distributional benefits. This is the third conclusion we wish to underline.

The fourth and final conclusion is that data required to quantify the potential effects of financial improvement are not provided by the standard flow-of-funds tables available for developing countries. This is largely due to the statistical difficulties of measuring these flows and implementing the sectorizations needed to properly analyze the effects of an evolving financial system. A clear conception of the importance of the financial system to economic growth is needed as a starting point for addressing these statistical problems. Some of the ideas in this chapter may be a small contribution toward the development of such a conception.